General Standard
Total Maximum Daily Load Development
for
Unnamed Tributary to Deep Creek
Nottoway County, VA

Prepared for:
Virginia Department of Environmental Quality
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Submitted by:

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Benthic TMDL for the Unnamed Tributary to Deep Creek

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Introduction

XT Deep Creek refers to an unnamed tributary of Deep Creek that is scheduled for Total Daily Maximum Load (TMDL) development due to violations of the General Water Quality Standard (Benthic). The impaired segment extends 2.13 miles from the Town of Crewe Municipal Sewage Treatment Plant (STP) to its confluence with Deep Creek. In addition to the benthic impairment, the tributary is listed on the 303(d) Part II list because of a compliance schedule at the STP for zinc. The impairment was initially listed in 1994. The impairment is attributed to excessive solids deposits in the stream as a result of the STP discharge.

Changes to the facility's operations and maintenance practice have ensured satisfactory process function of the STP under normal conditions. However, surcharges of the plant headworks that are attributable to inflow/infiltration (I/I) have resulted in overflows of raw (albeit diluted) wastewater to the unnamed tributary of Deep Creek approximately 100 yards upstream of the current outfall location. Town residents reported several other overflows in the area of town draining to the unnamed tributary of Deep Creek in the 1990's. However, until VADEQ personnel visited with the town's administration in 2001 and threatened criminal prosecution, overflows were not being reported on a regular basis.

Benthic Community Assessment

The Stream Condition Index (SCI), from 1994 to 2002, was used for benthic assessments. Because the SCI score does not depend on values from a reference station, the scores were calculated for both the biological monitoring Station XGP001.80 and the reference station XGP002.20. Conditions below the Town of Crewe STP have been severely impaired until late in 1997 when the benthic status improved to moderately impaired. The reference station, above the STP, has also been moderately impaired and borderline moderately-severely impaired on one occasion. The trend at both stations has been toward an improved benthic community but the trend has been much more pronounced at the station below the STP. Lack of flow and occasional sewage overflows above the reference station have led to highly varied conditions at that site.

STRESSOR IDENTIFICATION

Ambient water quality data, habitat assessments, and the history of sewage overflows were reviewed in order to identify stressors. Dissolved oxygen, pH, conductivity, temperature, nutrient, and total suspended solids (TSS). Levels were within acceptable limits for a healthy aquatic community.

Data from the two biological assessments carried out in 2002 indicate non-impaired conditions and are typical for a stream with fine sand substrate, leaf packs, and periodic low flows. Most of the macroinvertebrates identified were in the Family *Chironomidae* and the larvae of many common species are burrowers that prefer fine silt and sand habitat. *Tipulidae* (crane flies) were the next most abundant family observed. Larvae of some species of crane flies are very common on leaf packs and other species are well adapted to low flow conditions.

Ambient water quality is severely degraded by occasional sewage overflows from the Town of Crewe. An example is described in the Biological Monitoring Report from May 12, 1993 when an overflow occurred above the reference site on the tributary, wiping out the benthic community at both monitoring stations. No benthic life was observed and the creek below the overflow was full of septic solids deposits, bacteria, and fungi. When the VADEQ biologist returned the following November, solid deposits were gone along with the gross pollution effects. However, the Town of Crewe did not report overflows on a regular basis until 2003.

Landuse in the tributary subshed is primarily woodland (62%), pasture (20%) and residential (10%). The riparian corridor is a mixed Sycamore-Maple forest and litterfall is abundant, providing a good base for the benthic community food web. While many of the Biological Monitoring Reports describe the tributary habitat as supporting, it is not ideal. Ideal habitat for the benthic community would include more cobble-gravel substrate in the riffles but the bottom of the unnamed tributary is mostly fine white sand.

Stressors identified in the Unnamed Tributary to Deep Creek include

1) sub-optimal natural habitat and

2) overflows from the Town of Crewe Sewage Treatment Plant.

ALLOCATIONS

The natural habitat of the stream limits the diversity of aquatic life. The stream substrate is predominately fine sand and the stream is a small, first order stream that suffers from low flow during dry periods. The stream substrate favors chironomids over macroinvertebrate species that require cobble/gravel substrate, but this is the natural condition of the stream. The low flows in the tributary are augmented by the STP discharge, which will benefit the stream when the effluent meets the discharge permit limitations.

Overflows from the Town of Crewe STP are the most severe stressor to the benthic community and originate from more than one location. Overflows have occurred at the wastewater plant, manholes around the town, and at least one pump station, but only those overflows occurring at the headworks and manholes in the northwest corner of the town affect the tributary. The Town of Crewe has made improvements in the treatment plant but the town will have to address the overflow problems caused by inflow and infiltration to maintain the health of the tributary. In 2003, overflows to the unnamed tributary totaled between 260,000 gallons and 360,000 gallons. The allocations for XT Deep Creek are given in Table ES.1.

Table ES.0.1 Average annual loads of raw sewage (kg/year) allocated to XT Deep Creek.

Impairment	WLA[1]	LA	MOS	TMDL
Total	0	0	*Implicit*	0

[1]The only point source permitted in the drainage is the Crewe STP (VPDES # VA0020303).

It is also recommended that the Town of Crewe find an appropriate name for the Unnamed Tributary to Deep Creek. Water quality managers have found that a stream is more likely to be cared for if it has a name. Naming a stream can be an effective activity to begin the process of stream restoration.

1. INTRODUCTION

1.1 Background

The need for TMDLs to be conducted in the Appomattox River watershed, including the Unnamed Tributary to Deep Creek, is based on provisions of the Clean Water Act. The document, *Guidance for Water Quality-Based Decisions: The TMDL Process* (United States Environmental Protection Agency, 1999), states:

> *According to Section 303(d) of the Clean Water Act and EPA water quality planning and management regulations, States are required to identify waters that do not meet or are not expected to meet water quality standards even after technology-based or other required controls are in place. The waterbodies are considered water quality-limited and require TMDLs.*
>
> *…A TMDL is a tool for implementing State water quality standards, and is based on the relationship between pollution sources and in-stream water quality conditions. The TMDL establishes the allowable loadings or other quantifiable parameters for a waterbody and thereby provides the basis for States to establish water quality-based controls. These controls should provide the pollution reduction necessary for a waterbody to meet water quality standards.*

The Virginia Department of Environmental Quality (VDEQ) refers to the Unnamed Tributary of Deep Creek as XT-Deep Creek. The small, first-order stream is in the Appomattox River watershed (USGS Hydrologic Unit Code #02080207) and it is scheduled for TMDL development due to violations of the General Water Quality Standard (benthic). The area surrounding the impaired stream segment is shown in Figure 1.1. The impaired segment extends 2.13 miles from the Town of Crewe Municipal Sewage Treatment Plant (STP) to its confluence with Deep Creek. In addition to the benthic impairment, the tributary is listed on the 303(d) Part II list because of a compliance schedule at the STP for zinc. The impairment was initially listed in 1994. The segment ID is VAP-J11R-03 and the quarterly biological monitoring station, 2-XGP001.80, is located just below the STP at the Route 619 Bridge (latitude 37.188, longitude 78.0932).

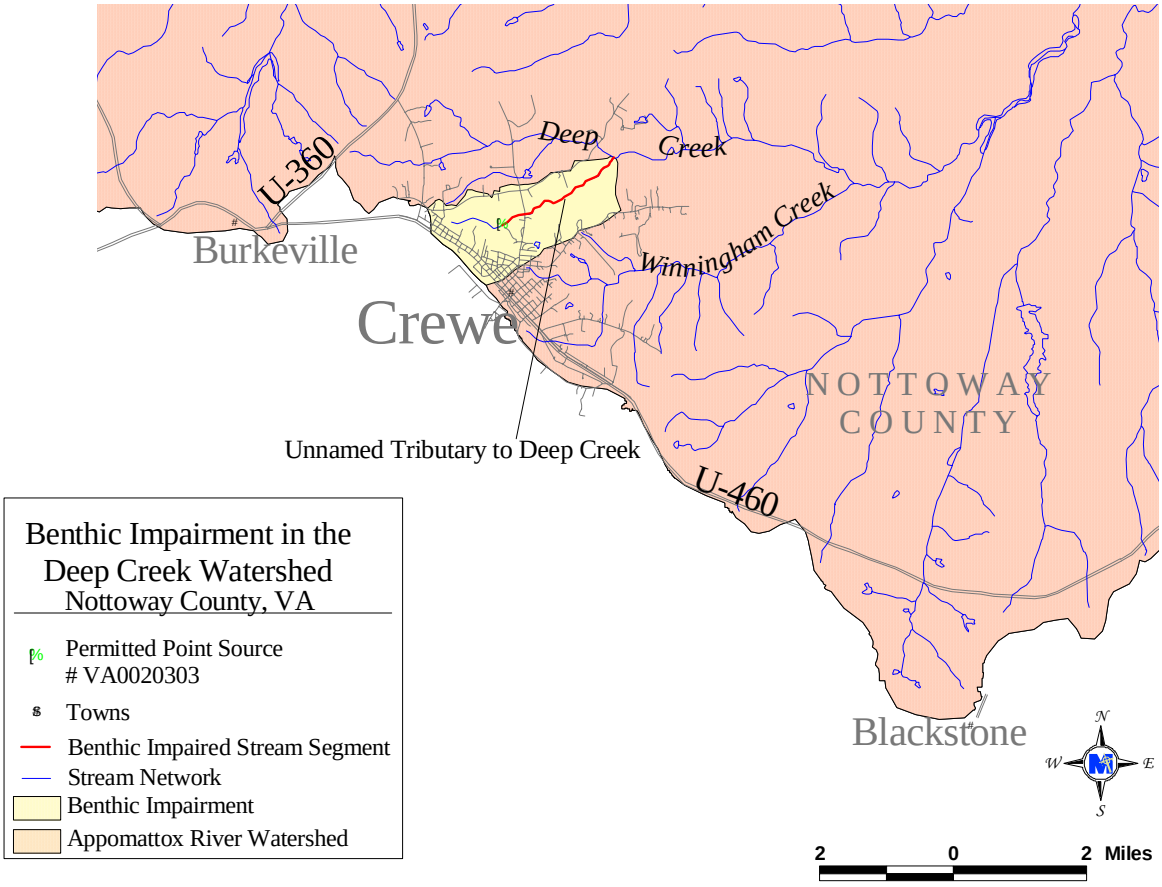

Figure 1.1 Location of the benthic impairment on the tributary to Deep Creek.

The benthic community was impaired from 1985 – 2001 as compared to the benthic community at the reference site 2-XGP002.20, located just upstream of the STP discharge. The impairment is attributed to excessive solids deposits in the stream as a result of the STP discharge (VA0020303). According to the comments in a 1990 Virginia Department of Environmental Quality (VADEQ) Biological Monitoring Report, the tributary below the STP has been severely degraded since 1985. The same report states that the habitat in the tributary was assessed and classified as "supporting". The Town of Crewe has been operating a new 0.5 MGD treatment plant since November 1997. While the stream has most often been severely impaired, it was found to be moderately impaired for the years 1991, 1994, 1997, and 1998. There was no data available for 1999 – 2001 but the data for both biological assessments carried out in 2002

indicate the stream is non-impaired. It would appear that the facility upgrades have led to improved conditions in the stream below the STP outfall.

Changes to the facility's operations and maintenance practice have ensured the normal process function of the STP under normal conditions. However, surcharges of the plant headworks that are attributable to inflow/infiltration (I/I) have resulted in overflows of raw (albeit diluted) wastewater to the unnamed tributary of Deep Creek approximately 100 yards upstream of the current outfall location. Town residents reported several other overflows in the area of town draining to the unnamed tributary of Deep Creek in the 1990's. However, until VADEQ personnel visited with the town's administration in 2001 and threatened criminal prosecution, overflows were not being reported on a regular basis.

1.2 Applicable Water Quality Standards

According to 9 VAC 25-260-5 of Virginia's State Water Control Board *Water Quality Standards*, the term "water quality standards" means "…provisions of state or federal law which consist of a designated use or uses for the waters of the Commonwealth and water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the State Water Control Law and the federal Clean Water Act."

As stated in Virginia state law 9 VAC 25-260-10 (Designation of uses),

> *A. All state waters, including wetlands, are designated for the following uses: recreational uses, e.g., swimming and boating; the propagation and growth of a balanced, indigenous population of aquatic life, including game fish, which might reasonably be expected to inhabit them; wildlife; and the production of edible and marketable natural resources, e.g., fish and shellfish.*
>
> ◆
>
> *D. At a minimum, uses are deemed attainable if they can be achieved by the imposition of effluent limits required under §§301(b) and 306 of the Clean Water Act and cost-effective and reasonable best management practices for nonpoint source control.*
>
> *G. The [State Water Control] board may remove a designated use which is not an existing use, or establish subcategories of a use, if the board can demonstrate that attaining the designated use is not feasible because:*

1. *Naturally occurring pollutant concentrations prevent the attainment of the use;*

2. *Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating state water conservation requirements to enable uses to be met;*

◆

6. *Controls more stringent than those required by §§301(b) and 306 of the Clean Water Act would result in substantial and widespread economic and social impact.*

1.2.1 Applicable Criterion for Benthic Impairment

The **General Standard,** as defined in Virginia state law 9 VAC25-260-20, states:

A. All state waters, including wetlands, shall be free from substances attributable to sewage, industrial waste, or other waste in concentrations, amounts, or combinations which contravene established standards or interfere directly or indirectly with designated uses of such water or which are inimical or harmful to human, animal, plant, or aquatic life.

The General Standard is implemented by VADEQ through application of the Rapid Bioassessment Protocol II (RBP). Using the RBP, the health of the benthic macroinvertebrate community is typically assessed through measurement of eight biometrics, which measure different aspects of the community's overall health (Table 1.1). Surveys of the benthic macroinvertebrate community performed by VADEQ are assessed at the family taxonomic level.

Each biometric measured at a target station is compared to the same biometric measured at a reference (non-impaired) station to determine each biometric score. These scores are then summed and used to determine the overall bioassessment (*e.g.*, non-impaired, moderately impaired, or severely impaired).

Table 1.1 Components of the RBP Assessment.

Biometric	Benthic Health [1]
Taxa Richness	↑
Modified Family Biotic Index	↓
Scraper to Filtering Collector Ratio	↑
EPT / Chironomid Ratio	↑
% Contribution of Dominant Family	↓
EPT Index	↑
Community Loss Index	↓
Shredder to Total Ratio	↑

[1] An upward arrow indicates a positive response in benthic health when the associated biometric increases.

1.3 Benthic Community Assessment

The General Standard is implemented by VADEQ through application of the Rapid Bioassessment Protocol II (RBP II). However, in the case of the Unnamed Tributary, the reference station was eventually impacted by overflows from the Town of Crewe STP. Because the benthic condition at VDEQ biological monitoring stations are assessed by comparison to a reference station, the RBP II scoring system then failed to give an accurate assessment. To overcome this problem, the Stream Condition Index (SCI) was used to calculate assessment score. The SCI uses the same eight biometrics as the RBP II but the score is based on a system derived from statistical analysis of a large benthic database rather than by comparison to a single reference station. The Stream Condition Index (SCI), from 1994 to 2002, is displayed in Table 1.2. Because the SCI score does not depend on values from a reference station, the scores have been calculated for both the biological monitoring Station XGP001.80 and the reference station XGP002.20. Conditions below the Town of Crewe STP have been severely impaired until late in 1997 when the benthic status improved to moderately impaired. The reference station, above the STP, has also been moderately impaired and borderline moderately-severely impaired on one occasion. As can be seen in Figure 1.2, the trend at both stations has been toward an improved benthic community but the trend has been much more pronounced at the station below the STP. Lack of flow and occasional sewage overflows above the reference station have led to highly varied conditions at that site.

Table 1.2 SCI scores for biological monitoring stations on the unnamed tributary to Deep Creek.

Collection Date		XGP001.80		XGP002.20	
Year	Month-Day	SCI	Condition	SCI	Condition
1994	Nov-94	6.2	SI	37.0	MI
1995	May-95	12.3	SI	18.3	SI-MI
1996	May-96	6.6	SI	38.2	MI
1996	Oct-96	NA	NA	24.3	MI
1996	Nov-96	11.2	SI	11.4	SI-MI
1997	May-97	16.2	SI	41.1	MI
1997	Nov-97	26.0	MI	44.4	MI
1998	May-98	22.4	MI	37.0	MI
2002	Jun-02	27.3	MI	43.0	MI
2002	Sep-02	33.4	MI	33.8	MI

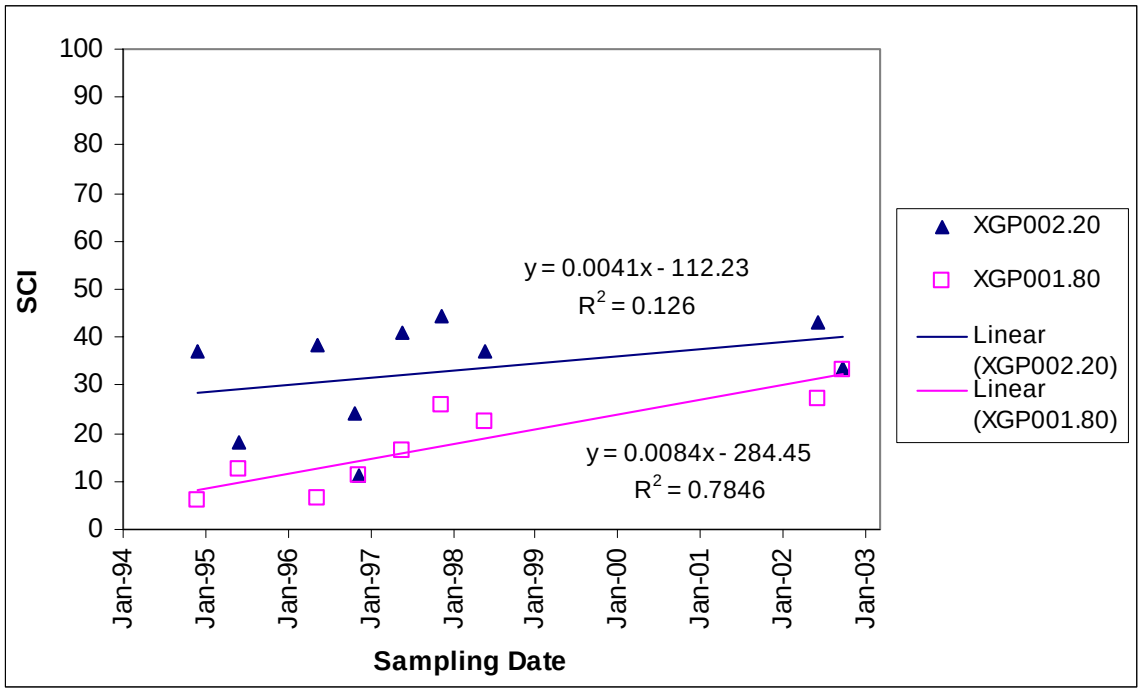

Figure 1.2 SCI trends at biological monitoring stations on the unnamed tributary to Deep Creek.

2. STRESSOR IDENTIFICATION

2.1 Ambient Water Quality Data for XT Deep Creek

Ambient water quality data were assembled from the Biological Monitoring Report data sheets and are shown in Table 2.1. Two values for conductivity, shown in parentheses, did not appear credible and were not included in the analysis.

Table 2.1 Existing water quality data for XT Deep Creek.

	DO (mg/L)		pH		Conductivity (□mho/cm)		Temperature (°C)	
Date	above STP	below STP	above STP	below STP	above STP	below STP	above STP	below STP
9/25/2002	7.0	8.2	6.5	7.1	70	125	22.5	24.5
6/5/2002	8.1	8.2	7.0	7.4	56	125	23.0	25.3
5/25/1998	6.5	8.0	7.0	7.0	150	(10)	23.0	20.0
11/11/1997	8.5	8.5	NA	NA	(1007)	115	13.0	15.0
5/29/1997	8.9	6.0	6.8	7.3	85	125	18.0	21.0
11/18/1996	10.9	8.8	6.8	7.1	55	125	8.0	11.0
5/30/1995	7.9	7.7	7.1	7.6	65	120	16.0	19.0
11/28/1994	9.0	6.1	6.9	6.4	85	300	10.0	15.0
5/12/1994	6.3	5.7	7.0	7.0	65	190	15.0	17.0
11/15/1993	10.1	5.5	6.3	6.0	90	320	15.0	20.0
5/12/1993	6.0	NA	7.0	NA	270	NA	20.0	NA
11/20/1992	11.9	10.0	7.1	7.2	75	190	5.0	7.0
4/30/1992	11.5	9.9	7.2	7.1	80	155	12.0	12.5
10/18/1991	10.0	8.3	7.1	7.7	55	90	14.0	14.0
5/13/1991	7.8	6.7	7.0	7.0	65	190	20.0	21.1
11/26/1990	NA	9.2	NA	7.2	NA	275	NA	15.0
4/3/1990	11.3	10.5	6.8	7.0	25	80	10.5	11.0
10/26/1989	11.2	10.1	6.8	7.2	45	75	9.0	10.5
4/6/1989	12.2	10.3	7.0	7.3	NA	NA	8.5	14.0
average	**9.2**	**8.2**	**6.9**	**7.1**	**83.5**	**162.5**	**14.6**	**16.3**

* Data taken from biological assessment report data sheets, 1995 –2002)

Biological assessments have been conducted on the tributary since the late 1970s, but water quality data was taken from the assessments only as far back as 1989, the beginning of the 5-year assessment period that led to the tributary being listed as impaired. The discharge from the STP does affect the water chemistry, but the overall effect does not appear to be negative. The average values shown in Table 2.1 indicate that the effluent decreases DO by 1 mg/L, increases the pH by 0.2 units, increases temperature by less than 2°C, and nearly doubles the conductivity. The DO below the discharge is still sufficient to maintain a healthy benthic community and the increased pH is likely to benefit the benthic community. The doubling of conductivity could impact some organisms sensitive to rapid change in conductivity, as organisms will sometimes be carried downstream into the effluent mixing zone. In general, conductivity that averages 160

μmho/cm is considered in the low range and will not stress the benthic community. The temperature difference is small and will also produce little, if any, stress, particularly since the largest temperature differences occur in the winter when the benthic community is less active. The slightly higher temperature could increase the benthic population by extending the period of higher community activity.

2.2 Nutrients

Nutrient enrichment in the unnamed tributary to Deep Creek was assessed by analyzing data on nitrate, total Kjeldahl nitrogen (TKN), total phosphorus (TP), orthophosphate (ortho-P), and total suspended solids (TSS). The data summaries are shown in Tables 2.2 – 2.6 for nitrite, TKN, TP, ortho-P, and TSS, respectively. Nitrate levels average 1.7 mg/L upstream from the STP and 3.6 mg/L downstream from the STP. Total phosphorus (TP), at averages of 0.1 mg/L, is not considered excessive. The STP controls phosphorus by alum addition; reported effluent concentrations are typically <0.5 mg/L and frequently <0.2 mg/L. TSS was included as an indicator of NPS pollution, assumed to be the primary source of nutrients. The average TSS values are <40 mg/L, not excessive, but the maximum values of 67 mg/L and 104 mg/L in September 2003 indicate that large inputs of silt do occur, probably as stormwater runoff events.

Table 2.2 Summary data for nitrate.

		Nitrate (mg/L)			
Station	**n**	**Min**	**Max**	**Avg**	**Stdev**
2XGP001.80	4	1.21	5.75	3.55	2.19
2XGP002.20	4	1.18	2.00	1.69	0.35

Table 2.3 Summary data for TKN.

		TKN (mg/L)			
Station	**n**	**Min**	**Max**	**Avg**	**Stdev**
2XGP001.80	11	0.40	1.00	0.55	0.20
2XGP002.20	4	0.20	0.90	0.50	0.29

Table 2.4 Summary data for TP.

Station	n	TP (mg/L)			
		Min	Max	Avg	Stdev
2XGP001.80	11	0.05	0.10	0.09	0.02
2XGP002.20	4	0.10	0.10	0.10	0.00

Table 2.5 Summary data for ortho-P.

Station	n	Ortho-P (mg/L)			
		Min	Max	Avg	Stdev
2XGP001.80	11	1.21	5.75	3.55	2.19
2XGP002.20	4	1.18	2.00	1.69	0.35

Table 2.6 Summary data for TSS.

Station	n	TSS (mg/L)			
		Min	Max	Avg	Stdev
2XGP001.80	11	3.00	67.00	11.55	18.55
2XGP002.20	4	3.00	104.00	30.75	49.00

MapTech personnel observed no heavy algal growth in August 2003, indicating that the stream is unlikely to receive excessive nutrients on a regular basis. Clearly, there will be nutrient inputs from the STP and the inputs are likely high at times when the treatment plant is not functioning optimally. The tributary empties to Deep Creek 1.8 miles below the STP and occasional spikes in nutrient input are likely to be flushed effectively from the system by high flow events. Because of sewage overflows from the Town of Crewe, high flow events may impact the benthic community both positively and negatively, but excessive nutrients do not appear to be a stressor.

Ammonia is both a nutrient and a toxicant, but was not detected (nd) in more than half of the ambient water samples collected in the unnamed tributary to Deep Creek (detection limit = 0.04 mg/L). The data summary is shown in Table 2.7. Ammonia has never been measured at above

0.19 mg/L, well below the chronic toxicity criteria for aquatic life, and does not appear to be a stressor.

Table 2.7 Summary data for ammonia.

Station	n	Ammonia (mg/L as N)			
		Min	Max	Avg	Stdev
2XGP001.80	11 (8 nd)	0.04	0.18	0.05	0.04
2XGP002.20	4 (2 nd)	0.04	0.19	0.08	0.07

2.3 Habitat in XT Deep Creek

Landuse in the tributary subshed (subshed 85) is shown in Figure 2.1 and summarized in Table 2.9. Landuse data for this study was taken from the National Land Cover Data (NLCD) produced cooperatively between the U.S. Geological Survey (USGS) and U.S. Environmental Protection Agency (EPA). Using 30-meter resolution Landsat 5 Thematic Mapper (TM) satellite images taken between 1990 and 1994, digital land use coverage was developed identifying up to 21 possible land use types. Classification, interpretation, and verification of the land cover dataset involved several data sources when available including: aerial photography; soils data; population and housing density data; state or regional land cover data sets; USGS land use and land cover (LUDA) data; 3-arc second Digital Terrain Elevation Data (DTED) and derived slope, aspect and shaded relief; and National Wetlands Inventory (NWI) data.

Table 2.8 Landuse in the subshed of the impaired tributary.

Landuse	Area (acres)	% Total Area
Woodland	1176.583	62.1
Pasture	382.750	20.2
Residential	187.951	9.9
Commercial & Services	75.322	4.0
Wetlands	51.238	2.7
Water	7.556	0.4
Cropland	5.431	0.3
Livestock Access	4.014	0.2
Barren	3.778	0.2
Total	1894.623	100.0

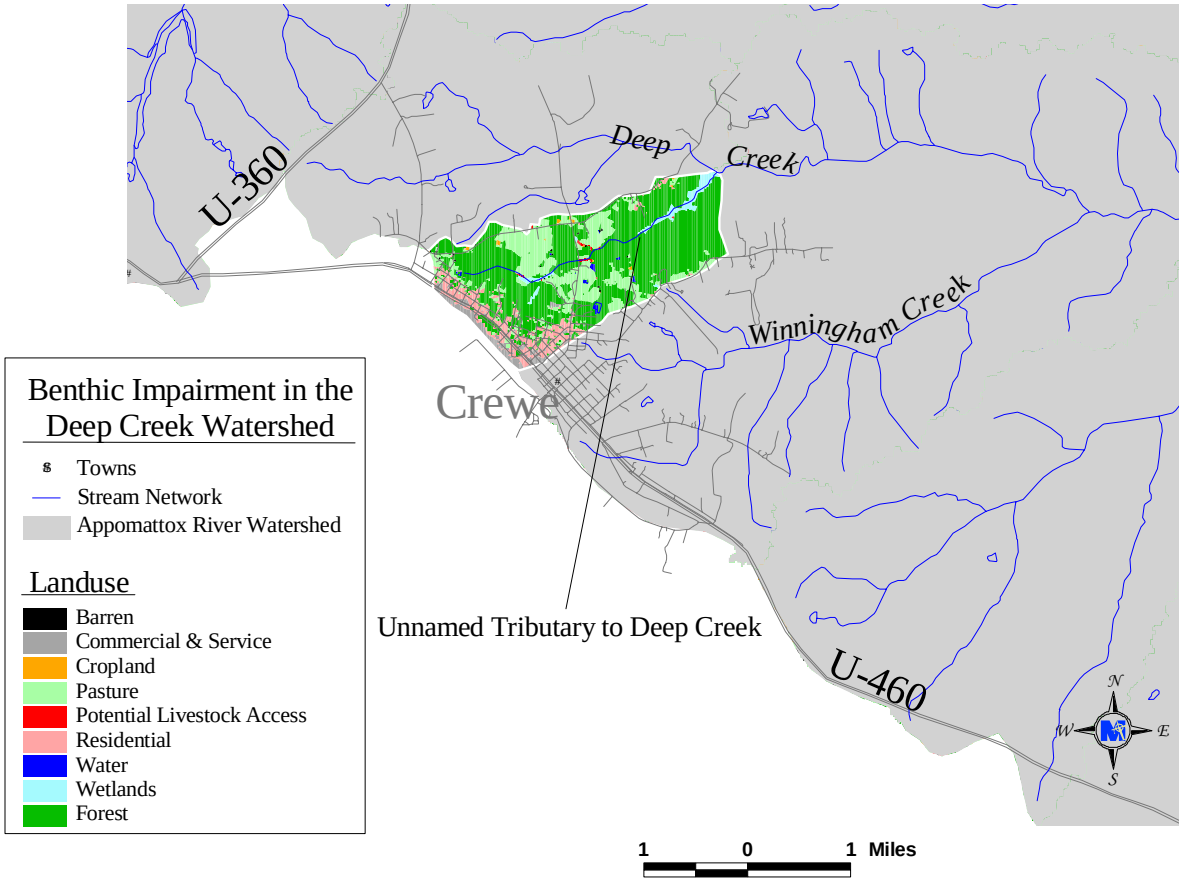

Figure 2.1 Landuse in the drainage for the unnamed tributary to Deep Creek.

While many of the Biological Monitoring Reports describe the tributary habitat as supporting, it is not ideal. The riparian corridor is a mixed Sycamore-Maple forest and litterfall is abundant, providing a good base for the benthic community food web. According to comments in the Biological Monitoring Reports, leaf packs in riffles are the most productive habitat. However, ideal habitat for the benthic community would include more cobble-gravel substrate in the riffles that would then also be heavily colonized by macroinvertebrates. The bottom of this stream is mostly fine white sand, as can be seen in Figure 2.2, and the reach pictured appears typical of most of the stream. Data selected from the two biological assessments carried out in 2002 are shown in Table 2.10. Results from the assessments indicate non-impaired conditions and are

typical for a stream with fine sand substrate, leaf packs, and periodic low flows. In September, at the station above the treatment plant, 66% of the macroinvertebrates identified were in the Family *Chironomidae* (non-biting midges). The chironomids are a diverse family but the larvae of many common species are burrowers that prefer fine silt and sand habitat. Below the STP outfall, 73% of the macroinvertebrates identified were chironomids. In June, the results were similar with 40% chironomids above the STP outfall and 65% below the outfall. *Tipulidae* (crane flies) were the next most abundant family observed. Larvae of some species of crane flies are very common on leaf packs. While crane fly larvae are associated with leaf packs and woody debris in swift riffles, they are also found along the margins of streams. That is, some *Tipulidae* species are well adapted to low flow conditions. This could explain the higher numbers of crane fly larvae above the STP outfall. The operator of the Town of Crewe STP, Larry Skweres, indicated that tributary flow was almost non-existent at times above the STP outfall. The additional flow provided by the STP could benefit the benthic community if the effluent quality was adequate.

Figure 2.2 XT Deep Creek near Crewe, Virginia, with fine sand substrate.
(Picture taken by MapTech personnel in August 2003)

Table 2.9 Data from the 2002 Biological Assessments of XT Deep Creek.

Date	Location	Total Count	*Chironomidae*	% *Chironomidae*	*Tipulidae*
9/25/2002	above STP	38	25	66	2
	below STP	55	40	73	0
6/5/2002	above STP	68	27	40	10
	below STP	49	32	65	4

2.4 Sewage Overflows

Ambient water quality is severely degraded by occasional sewage overflows from the Town of Crewe. An example is described in the Biological Monitoring Report from May 12, 1993 when an overflow occurred above the reference site on the tributary, wiping out the benthic community at both monitoring stations. The reference site was severely impaired because of a raw sewage

overflow 1 mile above the STP at a manhole in Crewe. Tree roots were blocking nearly the entire flow that was discharged to the tributary over a period of several months. Water at the reference site was gray colored and smelled of sewage. No benthic life was observed and the creek below the overflow was full of septic solids deposits, bacteria, and fungi. When the VADEQ biologist returned the following November, solid deposits were gone along with the gross pollution effects. However, due to drought summer flow, the benthic population remained very sparse. Table 2.8 provides information on the overflows. The data in Table 2.8 appears to concur with the VADEQ claim that the Town of Crewe did not report overflows on a regular basis until the past year (2003).

Table 2.10 Overflow incidents from the Town of Crewe Sewage Treatment Plant.

Date	Source of Overflow	Receiving Stream	Quantity (gallons)
12/14/2003	*Influent wet well at WWTP*	*unnamed trib to Deep Creek*	*63050*
12/10/2003	Upper East End Pump Station	Winningham Creek	8250
9/23/2003	*Crewe WWTP*	*unnamed trib to Deep Creek*	*69250*
9/23/2003	manholes	Winningham Creek and/or unnamed trib	43600
9/18/2003	*Crewe WWTP*	*unnamed trib to Deep Creek*	*28000*
9/14/2003	Ben Jones property, manhole C4	Winningham Creek	-1
8/3/2003	*Crewe WWTP*	*unnamed trib to Deep Creek*	*12000*
5/31/2003	Holte residence	Winningham Creek or unnamed trib	-1
5/26/2003	*WWTP Influent well*	*unnamed trib to Deep Creek*	*21000*
5/26/2003	Upper East End Pump Station	Winningham Creek	1900
5/18/2003	*Influent well at WWTP*	*unnamed trib to Deep Creek*	*15000*
5/18/2003	Upper East End Pump Station	Winningham Creek	12000
4/9/2003	Town of Crewe Manholes	Winningham Creek and/or unnamed trib	57000
3/20/2003	*Town of Crewe Manholes and WWTP*	*unnamed trib to Deep Creek*	*50000*
2/22/2003	Upper East End Pump Station	Winningham Creek	100
2/22/2003	*Town of Crewe WWTP*	*unnamed trib to Deep Creek*	*1000*
12/30/2002	NA	NA	200
7/2/2002	NA	NA	50
5/14/2002	NA	NA	10
5/3/2002	NA	NA	25
3/27/2002	NA	NA	50
1/28/2002	NA	NA	100
1/14/2002	NA	NA	100
11/28/2001	NA	NA	250
10/11/2001	NA	NA	200
		2003 discharge to unnamed tributary	**259,300 - 359,900**

2.5 Stressor Identification Summary

Stressors identified in the Unnamed Tributary to Deep Creek include

1) sub-optimal natural habitat and
2) overflows from the Town of Crewe Sewage Treatment Plant.

3. ALLOCATIONS

The natural habitat of the stream limits the diversity of aquatic life. The stream substrate is predominately fine sand and the stream is a small, first order stream that suffers from low flow during dry periods. The stream substrate favors chironomids over macroinvertebrate species that require cobble/gravel substrate, but this is the natural condition of the stream. The low flows in the tributary are augmented by the STP discharge, which will benefit the stream when the effluent meets the discharge permit limitations.

Overflows from the Town of Crewe STP are the most severe stressor to the benthic community and originate from more than one location. Overflows have occurred at the wastewater plant, manholes around the town, and at least one pump station, but only those overflows occurring at the headworks and manholes in the northwest corner of the town affect the tributary. The Town of Crewe has made improvements in the treatment plant but the town will have to address the overflow problems caused by inflow and infiltration to maintain the health of the tributary. In 2003, overflows to the unnamed tributary totaled between 260,000 gallons and 360,000 gallons. The allocations for XT Deep Creek are given in Table 3.1.

Table 3.1 Average annual loads of raw sewage (kg/year) allocated to XT Deep Creek.

Impairment	WLA[1]	LA	MOS	TMDL
Total	0	0	*Implicit*	0

[1]The only point source permitted in the drainage is the Crewe STP (VPDES # VA0020303).

Finally, it is recommended that the Town of Crewe find an appropriate name for the Unnamed Tributary to Deep Creek. Water quality managers have found that a stream is more likely to be cared for if it has a name. In fact, naming a stream can be an effective activity to begin the process of stream restoration.

APPENDIX A: DATA FROM MONTHLY DISCHARGE REPORTS

Data from Monthly discharge reports:
Crewe WWTP Permit No. VA0020303 Outfall Number 001
Receiving Stream – Deep Creek

Table A.1 Data from monthly discharge reports.

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-Dec-98	004	TSS	4.66	8.45		7.33	-999
10-Dec-98	068	TKN (N-KJEL)	7.72	11.96		12.21	13.82
10-Jan-99	004	TSS	13.94	29.89		18.65	42.5
10-Jan-99	068	TKN (N-KJEL)	14.38	20.43		19.08	28.83
10-Jan-99	159	CBOD5	9.66	21.74		12.43	30.75
10-Feb-99	001	FLOW	0.26	0.901			
10-Feb-99	004	TSS	18.22	32.82		15.86	20
10-Feb-99	068	TKN (N-KJEL)	17.08	20.52		19.02	28.62
10-Feb-99	159	CBOD5	21.3	39.66		19.33	26.4
10-Mar-99	068	TKN (N-KJEL)	14.05	18.47		19.08	22.4
10-Apr-99	068	TKN (N-KJEL)	7.83	11.99		8.76	16.28
10-Apr-99	157	CL2, TOTAL CONTACT			0.6		
10-May-99	001	FLOW	0.23	0.474			
10-May-99	002	PH			6.03		7.4
10-May-99	004	TSS	1.86	2.33		2.14	2.4
10-May-99	007	DO			7.8		
10-May-99	012	PHOSPHORUS, TOTAL (AS P)	1.47			1.7	
10-May-99	013	NITROGEN, TOTAL AS N	13.9	2386		11.35	13.3
10-May-99	068	TKN (N-KJEL)	2.53	5.1		2.95	6.4
10-May-99	157	CL2, TOTAL CONTACT			0.6		
10-May-99	159	CBOD5	2.4	3.21		2.77	3.2
10-May-99	165	CL2, INST RES MAX					0
10-May-99	213	CL2, INST TECH MIN LIMIT			0.6		-999
10-Jun-99	001	FLOW	0.202	0.46			
10-Jun-99	002	PH			7.28		7.98
10-Jun-99	004	TSS	2.04	2.06		2.86	3.4
10-Jun-99	007	DO			7.2		
10-Jun-99	012	PHOSPHORUS, TOTAL (AS P)	1.81			2.52	
10-Jun-99	013	NITROGEN, TOTAL AS N	7.66	8.22		10.47	11.15
10-Jun-99	068	TKN (N-KJEL)	1.58	3.67		2.21	5.1
10-Jun-99	157	CL2, TOTAL CONTACT			1		
10-Jun-99	159	CBOD5	2.26	2.97		3.19	4.6
10-Jun-99	213	CL2, INST TECH MIN LIMIT			1		-999
10-Jul-99	001	FLOW	0.178	0.222			

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-Jul-99	002	PH			7.58		7.87
10-Jul-99	004	TSS	2.16	3.48		3.18	5
10-Jul-99	007	DO			7		
10-Jul-99	012	PHOSPHORUS, TOTAL (AS P)	1.95			2.86	
10-Jul-99	013	NITROGEN, TOTAL AS N	9.1	9.48		12.93	14.4
10-Jul-99	068	TKN (N-KJEL)	1.25	1.76		1.84	2.68
10-Jul-99	157	CL2, TOTAL CONTACT			1		
10-Jul-99	159	CBOD5	2.64	3.39		3.86	4.8
10-Jul-99	165	CL2, INST RES MAX					0
10-Jul-99	213	CL2, INST TECH MIN LIMIT			1		-999
10-Aug-99	001	FLOW	0.207	0.288			
10-Aug-99	002	PH			6.63		8.08
10-Aug-99	004	TSS	2.3	3.12		2.95	3.6
10-Aug-99	007	DO			7		
10-Aug-99	012	PHOSPHORUS, TOTAL (AS P)	0.81			1.12	
10-Aug-99	013	NITROGEN, TOTAL AS N	7.82	11.13		9.64	10.92
10-Aug-99	068	TKN (N-KJEL)	1.47	2.843		1.9	3.8
10-Aug-99	157	CL2, TOTAL CONTACT			1		
10-Aug-99	159	CBOD5	1.8	2.2		2.36	3
10-Aug-99	165	CL2, INST RES MAX					0
10-Aug-99	213	CL2, INST TECH MIN LIMIT			1		-999
10-Sep-99	001	FLOW	0.204	0.244			
10-Sep-99	002	PH			7.01		7.96
10-Sep-99	004	TSS	1.68	1.97		2.18	2.5
10-Sep-99	007	DO			7.2		
10-Sep-99	012	PHOSPHORUS, TOTAL (AS P)	0.08			0.1	
10-Sep-99	013	NITROGEN, TOTAL AS N	11.88	20.1		14.35	21.76
10-Sep-99	068	TKN (N-KJEL)	1.71	5.54		2.05	6.4
10-Sep-99	157	CL2, TOTAL CONTACT			1		
10-Sep-99	159	CBOD5	1.57	1.76		2.95	2.2
10-Sep-99	165	CL2, INST RES MAX					0
10-Sep-99	213	CL2, INST TECH MIN LIMIT			1		-999
10-Nov-99	001	FLOW	0.22	0.513			
10-Nov-99	002	PH			6.87		7.74
10-Nov-99	004	TSS	1.86	2.08		2.29	3.2
10-Nov-99	007	DO			7.6		
10-Nov-99	012	PHOSPHORUS, TOTAL (AS P)	0.04			0.05	
10-Nov-99	013	NITROGEN, TOTAL AS N	7.49	10.35		7.5	10.2
10-Nov-99	068	TKN (N-KJEL)	0.46	0.55		0.54	0.71

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-Nov-99	157	CL2, TOTAL CONTACT			0.9		
10-Nov-99	159	CBOD5	1.68	2.06		2	2
10-Nov-99	165	CL2, INST RES MAX					0
10-Nov-99	213	CL2, INST TECH MIN LIMIT			0.9		-999
10-Dec-99	001	FLOW	0.181	0.271			
10-Dec-99	002	PH			7.01		7.73
10-Dec-99	004	TSS	1.9	2.28		2.82	3.4
10-Dec-99	007	DO			8		
10-Dec-99	012	PHOSPHORUS, TOTAL (AS P)	0.04			0.05	
10-Dec-99	013	NITROGEN, TOTAL AS N	5.68	7.76		7.88	10.2
10-Dec-99	068	TKN (N-KJEL)	1.17	0.74		1.84	1.18
10-Dec-99	157	CL2, TOTAL CONTACT			0.8		
10-Dec-99	159	CBOD5	1.36	1.6		2	2
10-Dec-99	165	CL2, INST RES MAX					0
10-Dec-99	213	CL2, INST TECH MIN LIMIT			0.8		-999
10-Jan-00	001	FLOW	0.178	0.363			
10-Jan-00	002	PH			6.41		7.86
10-Jan-00	004	TSS	2.95	3.55		4.26	5.8
10-Jan-00	007	DO			8.2		
10-Jan-00	012	PHOSPHORUS, TOTAL (AS P)	0.04			0.06	
10-Jan-00	013	NITROGEN, TOTAL AS N	10.86	12.66		17.77	19.67
10-Jan-00	068	TKN (N-KJEL)	5.17	7.23		8.17	11.72
10-Jan-00	157	CL2, TOTAL CONTACT			1		
10-Jan-00	159	CBOD5	1.44	1.61		2.13	2.6
10-Jan-00	165	CL2, INST RES MAX					0
10-Jan-00	213	CL2, INST TECH MIN LIMIT			1		-999
10-Feb-00	001	FLOW	.209	.640			
10-Feb-00	002	PH			6.89		7.82
10-Feb-00	004	TSS	2.28	2.45		2.76	3.60
10-Feb-00	007	DO			8.4		
10-Feb-00	012	PHOSPHORUS, TOTAL (AS P)	.04			.05	
10-Feb-00	013	NITROGEN, TOTAL AS N	11.88	15.48		15.78	16.69
10-Feb-00	068	TKN (N-KJEL)	6.27	7.91		7.03	11.10
10-Feb-00	157	CL2, TOTAL CONTACT			1.0		
10-Feb-00	159	CBOD5	1.68	2.10		2	2
10-Feb-00	165	CL2, INST RES MAX					
10-Feb-00	213	CL2, INST TECH MIN LIMIT			1		
10-Mar-00	001	FLOW	.291	.531			
10-Mar-00	002	PH			7.02		7.70

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-Mar-00	004	TSS	2.32	2.43		2.1	2.2
10-Mar-00	007	DO			8.2		
10-Mar-00	012	PHOSPHORUS, TOTAL (AS P)	.05			.05	
10-Mar-00	013	NITROGEN, TOTAL AS N	12.17	17.75		11.99	18.68
10-Mar-00	068	TKN (N-KJEL)	12.84	12.70		12.53	14.20
10-Mar-00	157	CL2, TOTAL CONTACT			1.0		
10-Mar-00	159	CBOD5	2.14	2.19		2	2
10-Mar-00	165	CL2, INST RES MAX					
10-Mar-00	213	CL2, INST TECH MIN LIMIT			1.0		
10-Apr-00	001	FLOW	.237	.494			
10-Apr-00	002	PH			6.62		7.91
10-Apr-00	004	TSS	72.80	275.34		50.30	167.40
10-Apr-00	007	DO			7.4		
10-Apr-00	012	PHOSPHORUS, TOTAL (AS P)	1.33			.97	
10-Apr-00	013	NITROGEN, TOTAL AS N	11.92	12.21		16.76	17.75
10-Apr-00	068	TKN (N-KJEL)	17.06	27.95		17.43	18.96
10-Apr-00	157	CL2, TOTAL CONTACT			.8		
10-Apr-00	159	CBOD5	16.82	43.26		14.83	30.60
10-Apr-00	165	CL2, INST RES MAX					
10-Apr-00	213	CL2, INST TECH MIN LIMIT			.8		
10-Jun-00	001	FLOW	0.230	0.268			
10-Jun-00	002	PH			7.06		7.76
10-Jun-00	004	TSS	2.61	3.57		3.04	4.00
10-Jun-00	007	DO			7.2		
10-Jun-00	012	PHOSPHORUS, TOTAL (AS P)	007			0.09	
10-Jun-00	013	NITROGEN, TOTAL AS N	12.58	15.17		15.57	19.43
10-Jun-00	068	TKN (N-KJEL)	10.74	15.63		12.80	18.68
10-Jun-00	157	CL2, TOTAL CONTACT			1.0		
10-Jun-00	159	CBOD5	1.71	1.86		2.00	
10-Jun-00	165	CL2, INST RES MAX					0
10-Jun-00	213	CL2, INST TECH MIN LIMIT			1.0		
10-Jul-00	001	FLOW	0.196	0.346			
10-Jul-00	002	PH			6.87		7.42
10-Jul-00	004	TSS	1.49	1.76		2.00	2.00
10-Jul-00	007	DO			7.4		
10-Jul-00	012	PHOSPHORUS, TOTAL (AS P)	0.08			0.10	
10-Jul-00	013	NITROGEN, TOTAL AS N	3.95	4.48		5.88	6.52
10-Jul-00	068	TKN (N-KJEL)	0.39	0.55		0.51	0.64
10-Jul-00	157	CL2, TOTAL CONTACT			1.0		

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-Aug-00	001	FLOW	0.179	0.255			
10-Aug-00	002	PH			6.72		7.51
10-Aug-00	004	TSS	1.39	1.63		2.00	2.00
10-Aug-00	007	DO			7.0		
10-Aug-00	012	PHOSPHORUS, TOTAL (AS P)	0.19			0.28	
10-Aug-00	013	NITROGEN, TOTAL AS N	3.82	4.20		5.94	6.24
10-Aug-00	068	TKN (N-KJEL)	0.42	0.63		0.60	0.93
10-Aug-00	157	CL2, TOTAL CONTACT			1.0		
10-Aug-00	159	CBOD5	1.39	1.63		2.00	2.00
10-Aug-00	165	CL2, INST RES MAX					0
10-Aug-00	213	CL2, INST TECH MIN LIMIT			1.0		
10-Sep-00	001	FLOW	0.159	0.208			
10-Sep-00	002	PH			6.86		7.41
10-Sep-00	004	TSS	1.21	1.34		2.04	2.25
10-Sep-00	007	DO			7.2		
10-Sep-00	012	PHOSPHORUS, TOTAL (AS P)	0.16			0.26	
10-Sep-00	013	NITROGEN, TOTAL AS N	6.09	6.89		9.84	10.28
10-Sep-00	068	TKN (N-KJEL)	0.27	0.45		0.47	0.79
10-Sep-00	157	CL2, TOTAL CONTACT			0.8		
10-Sep-00	159	CBOD5	1.19	1.29		2.00	2.00
10-Sep-00	165	CL2, INST RES MAX					0
10-Sep-00	213	CL2, INST TECH MIN LIMIT			0.8		
10-Oct-00	001	FLOW	0.173	0.316			
10-Oct-00	002	PH			6.88		7.30
10-Oct-00	004	TSS	1.37	1.67		2.05	2.20
10-Oct-00	007	DO			7.2		
10-Oct-00	012	PHOSPHORUS, TOTAL (AS P)	0.16			0.23	
10-Oct-00	013	NITROGEN, TOTAL AS N	4.47	5.72		6.99	10.21
10-Oct-00	068	TKN (N-KJEL)	0.40	0.58		0.57	.0.73
10-Oct-00	157	CL2, TOTAL CONTACT			0.9		
10-Oct-00	159	CBOD5	1.35	1.56		2.00	2.00
10-Oct-00	165	CL2, INST RES MAX					0
10-Oct-00	213	CL2, INST TECH MIN LIMIT			0.9		
10-Nov-00	001	FLOW	0.127	0.161			
10-Nov-00	002	PH			6.62		7.08
10-Nov-00	004	TSS	0.96	1.20		2.00	2.00
10-Nov-00	007	DO			7.6		
10-Nov-00	012	PHOSPHORUS, TOTAL (AS P)	0.06			0.12	
10-Nov-00	013	NITROGEN, TOTAL AS N	2.22	2.63		4.57	6.25

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-Nov-00	068	TKN (N-KJEL)	0.32	0.38		0.69	0.85
10-Nov-00	157	CL2, TOTAL CONTACT			0.8		
10-Nov-00	159	CBOD5	0.96	1.20		2.00	2.00
10-Nov-00	165	CL2, INST RES MAX					0
10-Nov-00	213	CL2, INST TECH MIN LIMIT			0.8		
10-Dec-00	001	FLOW	0.114	0.222			
10-Dec-00	002	PH			6.01		7.07
10-Dec-00	004	TSS	0.92	1.36		2.18	2.50
10-Dec-00	007	DO			7.8		
10-Dec-00	012	PHOSPHORUS, TOTAL (AS P)	0.03			0.08	
10-Dec-00	013	NITROGEN, TOTAL AS N	1.30	1.54		4.97	5.15
10-Dec-00	068	TKN (N-KJEL)	1.37	3.74		2.98	6.43
10-Dec-00	157	CL2, TOTAL CONTACT			0.8		
10-Dec-00	159	CBOD5	0.83	1.10		2.00	2.00
10-Dec-00	165	CL2, INST RES MAX					0
10-Dec-00	213	CL2, INST TECH MIN LIMIT			0.8		
10-Jan-01	001	FLOW	0.154	0.401			
10-Jan-01	002	PH			6.50		7.60
10-Jan-01	004	TSS	1.45	1.95		2.52	3.00
10-Jan-01	007	DO			8.4		
10-Jan-01	012	PHOSPHORUS, TOTAL (AS P)	0.12			0.20	
10-Jan-01	013	NITROGEN, TOTAL AS N	10.37	18.32		12.28	16.79
10-Jan-01	068	TKN (N-KJEL)	7.29	10.69		12.61	11.96
10-Jan-01	157	CL2, TOTAL CONTACT			1.4		
10-Jan-01	159	CBOD5	1.22	160		2.10	2.20
10-Jan-01	165	CL2, INST RES MAX					0
10-Jan-01	213	CL2, INST TECH MIN LIMIT			1.4		
10-Feb-01	001	FLOW	0.160	0.560			
10-Feb-01	002	PH			6.98		7.66
10-Feb-01	004	TSS	1.30	1.60		2.48	3.00
10-Feb-01	007	DO			8.4		
10-Feb-01	012	PHOSPHORUS, TOTAL (AS P)	0.17			0.32	
10-Feb-01	013	NITROGEN, TOTAL AS N	12.04	13.91		23.53	32.27
10-Feb-01	068	TKN (N-KJEL)	9.73	11.52		19.38	27.28
10-Feb-01	157	CL2, TOTAL CONTACT			1.2		
10-Feb-01	159	CBOD5	1.10	1.38		2.09	2.40
10-Feb-01	165	CL2, INST RES MAX					0
10-Feb-01	213	CL2, INST TECH MIN LIMIT			1.2		
10-Mar-01	001	FLOW	0.157	0.345			

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-Mar-01	002	PH			6.96		7.46
10-Mar-01	004	TSS	<1.12	<1.25		<2.15	<2.4
10-Mar-01	007	DO			8.0		
10-Mar-01	012	PHOSPHORUS, TOTAL (AS P)	0.07			0.13	
10-Mar-01	013	NITROGEN, TOTAL AS N	9.85	13.21		21.10	25.10
10-Mar-01	068	TKN (N-KJEL)	10.13	10.64		18.78	22.18
10-Mar-01	157	CL2, TOTAL CONTACT			1.2		
10-Mar-01	159	CBOD5	<1.12	<1.25		<2.0	<2.0
10-Mar-01	165	CL2, INST RES MAX					0
10-Mar-01	213	CL2, INST TECH MIN LIMIT			1.2		
10-Apr-01	001	FLOW	0.311	1.027			
10-Apr-01	002	PH			6.80		7.29
10-Apr-01	004	TSS	<2.30	<3.81		<2	<2
10-Apr-01	007	DO			8.0		
10-Apr-01	012	PHOSPHORUS, TOTAL (AS P)	<0.06			<0.06	
10-Apr-01	013	NITROGEN, TOTAL AS N	15.74	18.82		23.46	26.72
10-Apr-01	068	TKN (N-KJEL)	17.02	18.58		17.53	23.02
10-Apr-01	157	CL2, TOTAL CONTACT			1.2		
10-Apr-01	159	CBOD5	<2.35	<3.81		<2.01	<2.2
10-Apr-01	165	CL2, INST RES MAX					0
10-Apr-01	213	CL2, INST TECH MIN LIMIT			1.2		
10-May-01	001	FLOW	0.291	0.637			
10-May-01	002	PH			6.59		7.10
10-May-01	004	TSS	<2.17	<3.07		<2.0	<2.0
10-May-01	007	DO			7.6		
10-May-01	012	PHOSPHORUS, TOTAL (AS P)	<0.07			<0.06	
10-May-01	013	NITROGEN, TOTAL AS N	22.33	32.90		16.87	28.04
10-May-01	068	TKN (N-KJEL)	11.75	14.64		10.84	12.96
10-May-01	157	CL2, TOTAL CONTACT	<2.14	<3.07		<2.0	<2.0
10-May-01	159	CBOD5					0
10-May-01	165	CL2, INST RES MAX			1.2		
10-May-01	213	CL2, INST TECH MIN LIMIT					
10-Jun-01	001	FLOW	0.232	0.468			
10-Jun-01	002	PH			6.94		7.13
10-Jun-01	004	TSS	<1.63	<1.65		<2.0	<2.0
10-Jun-01	007	DO			7.4		
10-Jun-01	012	PHOSPHORUS, TOTAL (AS P)	0.19			0.23	
10-Jun-01	013	NITROGEN, TOTAL AS N	11.41	13.79		14.45	16.71
10-Jun-01	068	TKN (N-KJEL)	4.3	4.65		5.3	12.14

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-Jun-01	157	CL2, TOTAL CONTACT			0.8		
10-Jun-01	159	CBOD5	<1.63	<1.65		<2.0	<2.0
10-Jun-01	165	CL2, INST RES MAX					0
10-Jun-01	213	CL2, INST TECH MIN LIMIT			0.8		
10-Jul-01	001	FLOW	0.324	0.661			
10-Jul-01	002	PH			6.95		7.22
10-Jul-01	004	TSS	<2.31	<3.30		<2	<2
10-Jul-01	007	DO			7.4		
10-Jul-01	012	PHOSPHORUS, TOTAL (AS P)	0.94			0.84	
10-Jul-01	013	NITROGEN, TOTAL AS N	4.90	5.58		4.26	4.62
10-Jul-01	068	TKN (N-KJEL)	<0.66	1.04		0.57	<0.74
10-Jul-01	157	CL2, TOTAL CONTACT			0.8		
10-Jul-01	159	CBOD5	<2.31	<3.30		<2	<2
10-Jul-01	165	CL2, INST RES MAX					0
10-Jul-01	213	CL2, INST TECH MIN LIMIT			0.8		
10-Aug-01	001	FLOW	0.220	0.461			
10-Aug-01	002	PH			6.78		7.29
10-Aug-01	004	TSS	<1.76	<190		<2.1	<2.4
10-Aug-01	007	DO			7.0		
10-Aug-01	012	PHOSPHORUS, TOTAL (AS P)	1.35			1.64	
10-Aug-01	013	NITROGEN, TOTAL AS N	4.23	4.88		4.94	5.83
10-Aug-01	068	TKN (N-KJEL)	0.73	0.81		0.88	1.03
10-Aug-01	157	CL2, TOTAL CONTACT			1.0		
10-Aug-01	159	CBOD5	<1.69	<1.61		<2.0	<2.0
10-Aug-01	165	CL2, INST RES MAX					0
10-Aug-01	213	CL2, INST TECH MIN LIMIT			1.0		
10-Sep-01	001	FLOW	.225	.297			
10-Sep-01	002	PH			6.57		7.06
10-Sep-01	004	TSS	0	0		0	0
10-Sep-01	007	DO			7.2		
10-Sep-01	012	PHOSPHORUS, TOTAL (AS P)	.64			.77	
10-Sep-01	013	NITROGEN, TOTAL AS N	7.01	8.24		7.94	8.81
10-Sep-01	068	TKN (N-KJEL)	.44	.49		.53	.62
10-Sep-01	157	CL2, TOTAL CONTACT			1.0		
10-Sep-01	159	CBOD5	0	0		0	0
10-Sep-01	165	CL2, INST RES MAX					0
10-Sep-01	213	CL2, INST TECH MIN LIMIT			1.0		
10-Oct-01	001	FLOW	0.193	0.240			
10-Oct-01	002	PH			6.27		7.02

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-Oct-01	004	TSS	<1.49	<1.61		<2.0	<2.0
10-Oct-01	007	DO			7.4		
10-Oct-01	012	PHOSPHORUS, TOTAL (AS P)	0.47			0.63	
10-Oct-01	013	NITROGEN, TOTAL AS N	13.64	14.57		17.48	20.5
10-Oct-01	068	TKN (N-KJEL)	<0.16	0.34		<0.21	0.42
10-Oct-01	157	CL2, TOTAL CONTACT			1.0		
10-Oct-01	159	CBOD5	<1.49	<1.61		<2.0	<2.0
10-Oct-01	165	CL2, INST RES MAX					0
10-Oct-01	213	CL2, INST TECH MIN LIMIT			1.0		
10-Nov-01	001	FLOW	0.182	0.356			
10-Nov-01	002	PH			6.53		8.31
10-Nov-01	004	TSS	<1.38	<1.28		<2.04	<2.0
10-Nov-01	007	DO			7.6		
10-Nov-01	012	PHOSPHORUS, TOTAL (AS P)	0.27			0.41	
10-Nov-01	013	NITROGEN, TOTAL AS N	12.47	18.00		23.5	25.6
10-Nov-01	068	TKN (N-KJEL)	<0.97	2.78		<1.39	4.25
10-Nov-01	157	CL2, TOTAL CONTACT			0.6		
10-Nov-01	159	CBOD5	<1.32	<1.28		<2.0	<2.0
10-Nov-01	165	CL2, INST RES MAX					0
10-Nov-01	213	CL2, INST TECH MIN LIMIT			0.6		
10-Dec-01	001	FLOW	.143	.213			
10-Dec-01	002	PH			6.89		7.36
10-Dec-01	004	TSS	<1.25	2.11		<2.55	4.2
10-Dec-01	007	DO			7.6		
10-Dec-01	012	PHOSPHORUS, TOTAL (AS P)	.15			.28	
10-Dec-01	013	NITROGEN, TOTAL AS N	6.51	9.67		12.91	19.81
10-Dec-01	068	TKN (N-KJEL)	8.1	14.5		14.4	28.8
10-Dec-01	157	CL2, TOTAL CONTACT			1.0		
10-Dec-01	159	CBOD5	<1.08	<1.02		<2.0	<2.0
10-Dec-01	165	CL2, INST RES MAX					0
10-Dec-01	213	CL2, INST TECH MIN LIMIT			1.0		
10-Jan-02	001	FLOW	.160	.233			
10-Jan-02	002	PH			6.59		7.27
10-Jan-02	004	TSS	<1.53	<1.84		<2.57	<3.4
10-Jan-02	007	DO			7.6		
10-Jan-02	012	PHOSPHORUS, TOTAL (AS P)	.15			.25	
10-Jan-02	013	NITROGEN, TOTAL AS N	5.18	6.52		8.74	10.25
10-Jan-02	068	TKN (N-KJEL)	3.15	5.68		5.5	10.6
10-Jan-02	157	CL2, TOTAL CONTACT			1.0		

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-Jan-02	159	CBOD5	<1.22	<1.42		<2.0	<2.0
10-Jan-02	165	CL2, INST RES MAX					0
10-Jan-02	213	CL2, INST TECH MIN LIMIT			1.0		
10-Feb-02	001	FLOW	.189	.366			
10-Feb-02	002	PH			7.08		7.39
10-Feb-02	004	TSS	<2.10	<2.80		<3.00	<3.20
10-Feb-02	007	DO			8.0		
10-Feb-02	012	PHOSPHORUS, TOTAL (AS P)	.08			.11	
10-Feb-02	013	NITROGEN, TOTAL AS N	4.18	4.59		6.50	8.20
10-Feb-02	068	TKN (N-KJEL)	.77	1.02		1.11	1.13
10-Feb-02	157	CL2, TOTAL CONTACT			1.0		
10-Feb-02	159	CBOD5	<1.43	<1.73		<2.0	<2.0
10-Feb-02	165	CL2, INST RES MAX					0
10-Feb-02	213	CL2, INST TECH MIN LIMIT			1.0		
10-Mar-02	001	FLOW	.174	.352			
10-Mar-02	002	PH			6.48		7.19
10-Mar-02	004	TSS	<1.14	1.79		<1.79	3.0
10-Mar-02	007	DO			8.0		
10-Mar-02	012	PHOSPHORUS, TOTAL (AS P)	.04			.06	
10-Mar-02	013	NITROGEN, TOTAL AS N	3.26	3.84		5.28	6.23
10-Mar-02	068	TKN (N-KJEL)	.38	.68		.60	1.00
10-Mar-02	157	CL2, TOTAL CONTACT			1.0		
10-Mar-02	159	CBOD5	<1.35	<1.61		<2.0	<2.0
10-Mar-02	165	CL2, INST RES MAX					0
10-Mar-02	213	CL2, INST TECH MIN LIMIT			1.0		
10-Apr-02	001	FLOW	.228	.452			
10-Apr-02	002	PH			6.46		6.99
10-Apr-02	004	TSS	<1.8	<2.6		<2.0	<2.0
10-Apr-02	007	DO			7.8		
10-Apr-02	012	PHOSPHORUS, TOTAL (AS P)	<0.08			<0.08	
10-Apr-02	013	NITROGEN, TOTAL AS N	4.83	7.37		4.71	5.28
10-Apr-02	068	TKN (N-KJEL)	.80	1.80		.81	1.18
10-Apr-02	157	CL2, TOTAL CONTACT			1.0		
10-Apr-02	159	CBOD5	<1.75	<2.59		<2.0	<2.0
10-Apr-02	165	CL2, INST RES MAX					0
10-Apr-02	213	CL2, INST TECH MIN LIMIT			1.0		
10-May-02	001	FLOW	.203	.277			
10-May-02	002	PH			6.24		6.98
10-May-02	004	TSS	<1.53	<1.60		<2.0	<2.0

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-May-02	007	DO			7.6		
10-May-02	012	PHOSPHORUS, TOTAL (AS P)	.15			.19	
10-May-02	013	NITROGEN, TOTAL AS N	3.76	4.41		4.71	5.87
10-May-02	068	TKN (N-KJEL)	<.41	.57		<.53	.71
10-May-02	157	CL2, TOTAL CONTACT			0.7		
10-May-02	159	CBOD5	<1.53	<1.60		<2.0	<2.0
10-May-02	165	CL2, INST RES MAX					0
10-May-02	213	CL2, INST TECH MIN LIMIT			0.7		
10-Jun-02	001	FLOW	.208	.302			
10-Jun-02	002	PH			6.61		7.11
10-Jun-02	004	TSS	<1.74	<2.35		<2.26	<2.8
10-Jun-02	007	DO			7.8		
10-Jun-02	012	PHOSPHORUS, TOTAL (AS P)	.44			.56	
10-Jun-02	013	NITROGEN, TOTAL AS N	6.11	7.03		10.78	11.61
10-Jun-02	068	TKN (N-KJEL)	<.24	<.08		<.33	.52
10-Jun-02	157	CL2, TOTAL CONTACT			0.9		
10-Jun-02	159	CBOD5	<1.55	<1.71		<2.0	<2.0
10-Jun-02	165	CL2, INST RES MAX					0
10-Jun-02	213	CL2, INST TECH MIN LIMIT			0.9		
10-Jul-02	001	FLOW	.197	.241			
10-Jul-02	002	PH			6.83		7.24
10-Jul-02	004	TSS	<1.54	<1.61		<2.1	<2.2
10-Jul-02	007	DO			7.6		
10-Jul-02	012	PHOSPHORUS, TOTAL (AS P)	.86			1.16	
10-Jul-02	013	NITROGEN, TOTAL AS N	3.43	3.65		4.66	4.85
10-Jul-02	068	TKN (N-KJEL)	.52	.63		.69	.84
10-Jul-02	157	CL2, TOTAL CONTACT			1.0		
10-Jul-02	159	CBOD5	<1.50	<1.56		<2.0	<2.0
10-Jul-02	165	CL2, INST RES MAX					0
10-Jul-02	213	CL2, INST TECH MIN LIMIT			1.0		
10-Aug-02	001	FLOW	.190	.290			
10-Aug-02	002	PH			6.63		6.96
10-Aug-02	004	TSS	<1.42	<1.50		<2.0	<2.0
10-Aug-02	007	DO			7.2		
10-Aug-02	012	PHOSPHORUS, TOTAL (AS P)	.59			.84	
10-Aug-02	013	NITROGEN, TOTAL AS N	5.04	7.09		6.09	6.46
10-Aug-02	068	TKN (N-KJEL)	.43	.51		.61	.73
10-Aug-02	157	CL2, TOTAL CONTACT			1.0		
10-Aug-02	159	CBOD5	<1.45	<1.53		<2.0	<2.2

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-Aug-02	165	CL2, INST RES MAX					0
10-Aug-02	213	CL2, INST TECH MIN LIMIT			1.0		
10-Sep-02	001	FLOW	.216	.334			
10-Sep-02	002	PH			6.3		7.1
10-Sep-02	004	TSS	<1.9	2.7		<2.4	3.6
10-Sep-02	007	DO			7.6		
10-Sep-02	012	PHOSPHORUS, TOTAL (AS P)	<.18			<.22	
10-Sep-02	013	NITROGEN, TOTAL AS N	4.89	5.36		6.64	6.81
10-Sep-02	068	TKN (N-KJEL)	<.35	.45		<.45	.58
10-Sep-02	157	CL2, TOTAL CONTACT			1.1		
10-Sep-02	159	CBOD5	<1.6	<2.0		<2.0	<2.0
10-Sep-02	165	CL2, INST RES MAX					0
10-Sep-02	213	CL2, INST TECH MIN LIMIT			1.1		
10-Oct-02	001	FLOW	.211	.483			
10-Oct-02	002	PH			6.64		7.15
10-Oct-02	004	TSS	1.39	1.98		1.7	1.8
10-Oct-02	007	DO			7.6		
10-Oct-02	012	PHOSPHORUS, TOTAL (AS P)	0.06			0.08	
10-Oct-02	013	NITROGEN, TOTAL AS N	7.29	13.98		7.25	12.48
10-Oct-02	068	TKN (N-KJEL)	<0.31	0.32		<0.41	0.47
10-Oct-02	157	CL2, TOTAL CONTACT			0.8		
10-Oct-02	159	CBOD5	<1.62	<2.19		<2.0	<2.0
10-Oct-02	165	CL2, INST RES MAX					0
10-Oct-02	213	CL2, INST TECH MIN LIMIT			0.8		
10-Nov-02	001	FLOW	.281	.695			
10-Nov-02	002	PH			6.64		7.31
10-Nov-02	004	TSS	<2.5	<2.5		<2.3	<2.3
10-Nov-02	007	DO			7.8		
10-Nov-02	012	PHOSPHORUS, TOTAL (AS P)	.09			.08	
10-Nov-02	013	NITROGEN, TOTAL AS N	2.65	3.22		3.53	3.71
10-Nov-02	068	TKN (N-KJEL)	<.55	.52		<.54	.80
10-Nov-02	157	CL2, TOTAL CONTACT			1.1		
10-Nov-02	159	CBOD5	<5.2	<5.7		<QL	<QL
10-Nov-02	165	CL2, INST RES MAX					0
10-Nov-02	213	CL2, INST TECH MIN LIMIT			1.1		
10-Dec-02	001	FLOW	.384	1.0			
10-Dec-02	002	PH			6.75		7.19
10-Dec-02	004	TSS	3.6	7.3		1.9	2.9
10-Dec-02	007	DO			8.4		

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-Dec-02	012	PHOSPHORUS, TOTAL (AS P)	<0.12			<.07	
10-Dec-02	013	NITROGEN, TOTAL AS N	8.5	14.23		4.66	5.33
10-Dec-02	068	TKN (N-KJEL)	3.6	11.8		3.57	12.9
10-Dec-02	157	CL2, TOTAL CONTACT			1.0		
10-Dec-02	159	CBOD5	1.64	3.39		.92	1.6
10-Dec-02	165	CL2, INST RES MAX					0
10-Dec-02	213	CL2, INST TECH MIN LIMIT			1.0		
10-Jan-03	001	FLOW	0.348	0.882			
10-Jan-03	002	PH			6.87		7.44
10-Jan-03	004	TSS	1.52	3.06		1.14	1.48
10-Jan-03	007	DO			9.0		
10-Jan-03	012	PHOSPHORUS, TOTAL (AS P)	<.06			<.05	
10-Jan-03	013	NITROGEN, TOTAL AS N	6.97	10.71		7.38	11.1
10-Jan-03	068	TKN (N-KJEL)	4.7	9.1		4.5	8.3
10-Jan-03	157	CL2, TOTAL CONTACT			0.8		
10-Jan-03	159	CBOD5	1.03	1.75		0.80	0.95
10-Jan-03	165	CL2, INST RES MAX					0
10-Jan-03	213	CL2, INST TECH MIN LIMIT			0.8		
10-Feb-03	001	FLOW	0.281	0.725			
10-Feb-03	002	PH			6.84		7.29
10-Feb-03	004	TSS	1.66	1.67		1.52	1.71
10-Feb-03	007	DO			9.2		
10-Feb-03	012	PHOSPHORUS, TOTAL (AS P)	.06	.06		.06	
10-Feb-03	013	NITROGEN, TOTAL AS N	13.23	39.70		9.0	15.16
10-Feb-03	068	TKN (N-KJEL)	4.83	8.25		5.19	9.64
10-Feb-03	157	CL2, TOTAL CONTACT			1.1		
10-Feb-03	159	CBOD5	.80	.95		.95	1.12
10-Feb-03	165	CL2, INST RES MAX					0
10-Feb-03	196	ZINC, TOTAL RECOVERABLE	X	X		X	X
10-Feb-03	213	CL2, INST TECH MIN LIMIT			1.1		
10-Mar-03	001	FLOW	.416	1.094			
10-Mar-03	002	PH			6.88		7.54
10-Mar-03	004	TSS	2.40	3.50		1.6	1.9
10-Mar-03	007	DO			8.0		
10-Mar-03	012	PHOSPHORUS, TOTAL (AS P)	.14			.09	
10-Mar-03	013	NITROGEN, TOTAL AS N	10.0	10.84		8.15	9.82
10-Mar-03	068	TKN (N-KJEL)	.77	1.42		.60	1.36
10-Mar-03	157	CL2, TOTAL CONTACT			0.8		
10-Mar-03	159	CBOD5	1.62	2.51		1.03	1.16

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-Mar-03	165	CL2, INST RES MAX					0
10-Mar-03	196	ZINC, TOTAL RECOVERABLE	28.03	28.03		23.0	23.0
10-Mar-03	213	CL2, INST TECH MIN LIMIT			0.8		
10-Apr-03	001	FLOW	.522	1.438			
10-Apr-03	002	PH			7.18		7.52
10-Apr-03	004	TSS	4.34	8.72		1.77	2.8
10-Apr-03	007	DO			7.8		
10-Apr-03	012	PHOSPHORUS, TOTAL (AS P)	.12			.24	
10-Apr-03	013	NITROGEN, TOTAL AS N	7.51	7.83		11.9	13.5
10-Apr-03	068	TKN (N-KJEL)	.21	.37		.52	1.05
10-Apr-03	157	CL2, TOTAL CONTACT			0.7		
10-Apr-03	159	CBOD5	2.45	3.25		1.21	1.43
10-Apr-03	165	CL2, INST RES MAX					0
10-Apr-03	196	ZINC, TOTAL RECOVERABLE	46.6	46.6		26.0	26.0
10-Apr-03	213	CL2, INST TECH MIN LIMIT			0.7		
10-May-03	001	FLOW	0.5	1.3			
10-May-03	002	PH			7.2		7.5
10-May-03	004	TSS	5.7	17.1		2.2	4.3
10-May-03	007	DO			8.0		
10-May-03	012	PHOSPHORUS, TOTAL (AS P)	0.4			0.2	
10-May-03	013	NITROGEN, TOTAL AS N	15	11.4		6.4	6.7
10-May-03	068	TKN (N-KJEL)	0.6	1.37		0.3	0.4
10-May-03	157	CL2, TOTAL CONTACT			0.9		
10-May-03	159	CBOD5	2.1	4.3		1.0	1.1
10-May-03	165	CL2, INST RES MAX					0
10-May-03	196	ZINC, TOTAL RECOVERABLE	38.4	38.4		23	23
10-May-03	213	CL2, INST TECH MIN LIMIT			0.9		
10-Jun-03	001	FLOW	.6	1.4			
10-Jun-03	002	PH			6.9		7.6
10-Jun-03	004	TSS	<6.0	<11.0		<1.9	<2.4
10-Jun-03	007	DO			8.0		
10-Jun-03	012	PHOSPHORUS, TOTAL (AS P)	.25			.09	
10-Jun-03	013	NITROGEN, TOTAL AS N	17.1	18.0		10.5	12.5
10-Jun-03	068	TKN (N-KJEL)	<.66	<1.41		<.23	<.31
10-Jun-03	157	CL2, TOTAL CONTACT			.8		
10-Jun-03	159	CBOD5	<13.1	<21.8		<5.0	<5.0
10-Jun-03	165	CL2, INST RES MAX					0
10-Jun-03	196	ZINC, TOTAL RECOVERABLE	37	37		29	29
10-Jun-03	213	CL2, INST TECH MIN LIMIT			0.8		

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-Jul-03	001	FLOW	.6	.9			
10-Jul-03	002	PH			7.0		7.3
10-Jul-03	004	TSS	<2.5	<2.7		<1.2	<1.6
10-Jul-03	007	DO			8.0		
10-Jul-03	012	PHOSPHORUS, TOTAL (AS P)	.1			.2	
10-Jul-03	013	NITROGEN, TOTAL AS N	20.8	21.8		9.1	11.6
10-Jul-03	068	TKN (N-KJEL)	<.4	<.5		<.2	<.2
10-Jul-03	157	CL2, TOTAL CONTACT			.8		
10-Jul-03	159	CBOD5	<10.5	<11.8		<5.0	<5.0
10-Jul-03	165	CL2, INST RES MAX					0
10-Jul-03	196	ZINC, TOTAL RECOVERABLE	91	91		33	33
10-Jul-03	213	CL2, INST TECH MIN LIMIT			.8		
10-Aug-03	001	FLOW	.397	.779			
10-Aug-03	002	PH			7.1		7.3
10-Aug-03	004	TSS	2.0	2.3		1.3	1.6
10-Aug-03	007	DO			7.8		
10-Aug-03	012	PHOSPHORUS, TOTAL (AS P)	.25			.17	
10-Aug-03	013	NITROGEN, TOTAL AS N	17.0	19.6		11.0	14.1
10-Aug-03	068	TKN (N-KJEL)	<.20	<.20		<.20	<.20
10-Aug-03	157	CL2, TOTAL CONTACT			.8		
10-Aug-03	159	CBOD5	<5.0	<5.0		<5.0	<5.0
10-Aug-03	165	CL2, INST RES MAX					0
10-Aug-03	196	ZINC, TOTAL RECOVERABLE	63.2	63.2		36	36
10-Aug-03	213	CL2, INST TECH MIN LIMIT			0.8		
10-Sep-03	001	FLOW	0.451	0.986			
10-Sep-03	002	PH			7.1		7.3
10-Sep-03	004	TSS	<1.0	<2.4		<1.0	<1.0
10-Sep-03	007	DO			7.8		
10-Sep-03	012	PHOSPHORUS, TOTAL (AS P)	.23			.14	
10-Sep-03	013	NITROGEN, TOTAL AS N	17.3	33.0		9.0	10.01
10-Sep-03	068	TKN (N-KJEL)	<.20	<.20		<.20	<.20
10-Sep-03	157	CL2, TOTAL CONTACT			0.8		
10-Sep-03	159	CBOD5	<5.0	<5.0		<5.0	<5.0
10-Sep-03	165	CL2, INST RES MAX					0
10-Sep-03	196	ZINC, TOTAL RECOVERABLE	<20	<20		<20	<20
10-Sep-03	213	CL2, INST TECH MIN LIMIT			0.8		
10-Oct-03	001	FLOW	.486	1.231			
10-Oct-03	002	PH			7.1		7.5
10-Oct-03	004	TSS	<1.6	<3.2		<1.0	<1.1

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-Oct-03	007	DO			7.8		
10-Oct-03	012	PHOSPHORUS, TOTAL (AS P)	.31			.20	
10-Oct-03	013	NITROGEN, TOTAL AS N				14.2	17.6
10-Oct-03	068	TKN (N-KJEL)	<.29	<.89		<.20	<.26
10-Oct-03	157	CL2, TOTAL CONTACT			0.8		
10-Oct-03	159	CBOD5	<5.0	<5.0		<5.0	<5.0
10-Oct-03	165	CL2, INST RES MAX				<QL	<QL
10-Oct-03	196	ZINC, TOTAL RECOVERABLE	48.7	48.7		41	41
10-Oct-03	213	CL2, INST TECH MIN LIMIT			0.8		
10-Nov-03	001	FLOW	.309	.391			
10-Nov-03	002	PH			7.08		7.33
10-Nov-03	004	TSS	<1.0	<1.1		<1.0	<1.0
10-Nov-03	007	DO			8.0		
10-Nov-03	012	PHOSPHORUS, TOTAL (AS P)	<0.09			<0.08	
10-Nov-03	013	NITROGEN, TOTAL AS N				15.8	17.6
10-Nov-03	068	TKN (N-KJEL)	<.20	<.25		<.20	<.20
10-Nov-03	157	CL2, TOTAL CONTACT			0.7		
10-Nov-03	159	CBOD5	<5.0	<5.0		<5.0	<5.0
10-Nov-03	165	CL2, INST RES MAX				<QL	<QL
10-Nov-03	196	ZINC, TOTAL RECOVERABLE	84	84		66	66
10-Nov-03	213	CL2, INST TECH MIN LIMIT			0.7		
10-Dec-03	001	FLOW	.335	.721			
10-Dec-03	002	PH			7.02		7.45
10-Dec-03	004	TSS	<1.99	<1.27		<1.0	<1.0
10-Dec-03	007	DO			8.4		
10-Dec-03	012	PHOSPHORUS, TOTAL (AS P)	.11			.14	
10-Dec-03	013	NITROGEN, TOTAL AS N				22.2	41.9
10-Dec-03	068	TKN (N-KJEL)	<0.20	<0.20		<0.20	<0.20
10-Dec-03	157	CL2, TOTAL CONTACT			0.8		
10-Dec-03	159	CBOD5	<5.0	<5.0		<5.0	<5.0
10-Dec-03	165	CL2, INST RES MAX				<QL	<QL
10-Dec-03	196	ZINC, TOTAL RECOVERABLE	49.0	49.0		43	43
10-Dec-03	213	CL2, INST TECH MIN LIMIT			0.8		
10-Jan-04	001	FLOW	.494	1.220			
10-Jan-04	002	PH			7.01		7.43
10-Jan-04	004	TSS	<1.6	<3.6		<1.0	<1.3
10-Jan-04	007	DO			8.6		
10-Jan-04	012	PHOSPHORUS, TOTAL (AS P)	<0.10			<0.06	
10-Jan-04	013	NITROGEN, TOTAL AS N				4.36	5.55

Due Date	Parameter Code	Parameter Description	Quantity		Concentration		
			Average	Maximum	Minimum	Average	Maximum
10-Jan-04	068	TKN (N-KJEL)	<0.50	<0.50		<0.50	<0.50
10-Jan-04	157	CL2, TOTAL CONTACT			0.8		
10-Jan-04	159	CBOD5	<5.0	<5.0		<5.0	<5.0
10-Jan-04	165	CL2, INST RES MAX				<QL	<QL
10-Jan-04	196	ZINC, TOTAL RECOVERABLE	53.1	53.1		45	45
10-Jan-04	213	CL2, INST TECH MIN LIMIT			0.8		